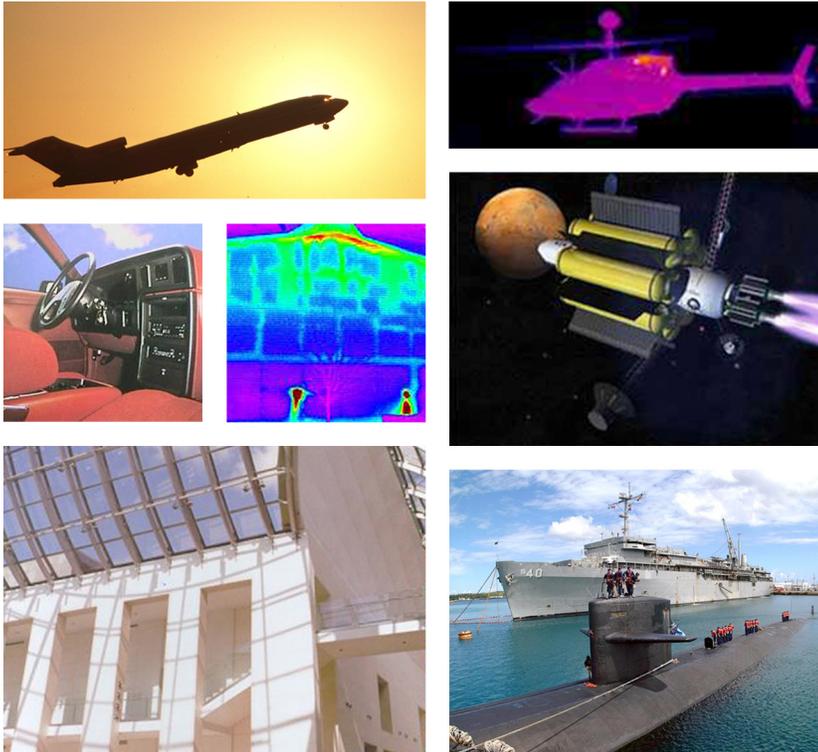




John F. Kennedy Space Center

New Inorganic/Organic Materials for Thermal and Acoustic Insulation



BENEFITS

- Improved versatility
- Excellent structural and mechanical properties
- Improved thermal performance
- Excellent low- and high-temperature performance, with outstanding flame resistance
- Improved acoustic attenuation

The National Aeronautics and Space Administration (NASA) seeks partners for the commercial production and use of a novel polymeric foam composite technology. These foam composites provide improvements in thermal and acoustic insulation, and can be used in rigid and flexible foams of varying densities. Researchers at Kennedy Space Center (KSC), FL originally developed this technology to improve the performance of polyimide foam. However, they do see additional applications in a variety of polymer foam systems.

NASA has had a growing need for high-performance polymer foams for cryogenic insulation, fireproofing, energy absorption, and other applications. Commercially available foams, however, do not meet all of the requirements for surviving extreme

APPLICATIONS

- Aerospace vehicles
- Commercial aircraft
- Ships, boats, and submarines
- Building construction materials
- Food, medical, and chemical storage and transport systems

TECHNOLOGY STATUS

- Patent pending
- U.S. patent
- Copyrighted
- Available to license
- Available for no-cost transfer
- Seeking industry partner for further codevelopment

environments. Most low-density foams crack at cryogenic temperatures, and the foams that can withstand extreme temperatures do not have the required structural integrity or thermal performance. Recently chemists at KSC collaborated with the innovators of the TEEK polyimide at NASA's Langley Research Center to improve thermal performance and maximize the sound attenuation properties of polyimide foam.

NASA needs for high-performance foams to support the development of thermal management materials for lunar habitat structures, as well as for components of fluid systems such as cryogenic transfer and storage systems. NASA welcomes the opportunity to leverage this technology into other commercial uses. These materials may prove useful in process piping, tanks for transporting and storing hot or cold fluids, ship and boat building, and aerospace applications.

Technology Details

The novelty of the invention comes from combining the polymer foam with a unique inorganic filler in a way that maximizes thermal performance while maintaining mechanical performance, chemical resistance, fire resistance, and the foam's ability to act as an acoustic insulator. The development of new manufacturing processes has brought about these unique composite materials.

Partnership Opportunities

NASA has applied for a U.S. patent on the new inorganic/organic materials for thermal and acoustic insulation and is seeking licensees of the patent. NASA has the authority to grant licenses on its domestic and foreign patents and patent applications pursuant to 35 U.S.C. 207-209. NASA has implemented this authority by means of the NASA Patent Licensing Regulations, 37 CFR § 404. All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or non-exclusive. If your company is interested in the new inorganic/organic materials for thermal and acoustic insulation, or if you desire additional information, please reference Case Numbers KSC-12848, KSC-12894, or KSC-12965 and contact: and contact:

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